

STIC Database Tracking Number: 244331

To: EPHREM ALEMU
Location: JEF-4B79
Art Unit: 2821
Thursday, November 29, 2007

Case Serial Number: 10/731520

From: MARY MIMS
Location: EIC2800
JEF-4B68 / JEF-4B59
Phone: (571)272-5928

mary.mims@uspto.gov

Search Notes

Dear Examiner Alemu:

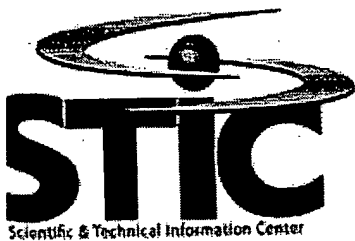
Attached are the results of the above requested search. The search was conducted using databases on STN. Please review all of the results.

If you have any questions, or would like a refocused search, please feel free to contact me using the information above.

Thanks,



Mary S. Mims



STIC Search Results Feedback Form

EIC 2800

Questions about the scope or the results of the search? **Contact the EIC searcher or contact:**

Jeff Harrison, EIC 2800 Team Leader
571-272-2511, JEF 4B68

Voluntary Results Feedback Form

➤ I am an examiner in Workgroup: Example: 2810

➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to STIC-EIC2800 JEF-4B68



NOV 28 REC'D

244331

SEARCH REQUEST FORM Scientific and Technical Information Center - EIC2800

Rev. 3/19/2007 This is an experimental format -- Please give suggestions or comments to Jeff Harrison, JEF-4B68, 22511.

Date 11/28/07 Serial # 10/731,520 Priority Application Filing Date 12/9/2003Your Name EPHREM ALEMU Examiner # ~~ALSTAD~~ 74993AU 2821 Phone 21818 Room 4B79

In what format would you like your results? Paper is the default. PAPER DISK EMAIL

If submitting more than one search request form, please prioritize the searches in order of need.

Where have you searched so far on this case?

Circle: USPAT USPAPUB DWPI EPO Abs JPO Abs IBM TDB
Other: _____

What relevant art have you found so far? Please attach citations or Information Disclosure Statements.

What types of references would you like? Please checkmark:

Primary Refs _____ Nonpatent Literature _____ Teaching Refs _____
Secondary Refs _____ Foreign Patents _____ Other _____

If this is a "Fast & Focused Search" request, put a checkmark here:

And then please speak in-person immediately with the
EIC2800 Technical Information Specialist or with an EIC2800 Searcher.A "Fast & Focused Search" is completed in 2 hours (maximum). The search must be on a very specific topic and meet certain criteria. The criteria are posted in EIC2800 and on the STIC NPL Web Page at
<http://uspto-a-patrr-2/siraapps/stic/npl/nplsearch.htm>

In your own words, what is the topic, such as the novelty, motivation, utility, or other specific facets defining the desired focus of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

antenna radiator radiating resonantvia aperture cavity through holeSubstrate dielectric print#3 circuit board PCBPlease focus your search where the antenna
is formed within the substrate.Pg Pub - 20050122265**Staff Use Only**Searcher: M.M.msSearcher Phone: 25928Searcher Location: STIC-EIC2800, JEF-4B68Date Searcher Picked Up: 11/29/07Date Completed: 11/29/07Searcher Prep/Rev Time: 30Online Time: 95**Type of Search**

Structure (#) _____

Bibliographic ☒ _____

Litigation _____

Fulltext _____

Patent Family _____

Other _____

Vendors

STN _____

Dialog _____

Questel/Orbit _____

Lexis-Nexis _____

WWW/Internet _____

Other _____

11/29/2007 10/731520 Alemu

=> d his nofil

(FILE 'HOME' ENTERED AT 09:15:25 ON 29 NOV 2007)

FILE 'WPIX' ENTERED AT 09:15:37 ON 29 NOV 2007

L1 6146 SEA ABB=ON PLU=ON (ANTENNA?/BI,BIEX OR (RADIAT?/BI,BIEX OR
RESONAT?/BI,BIEX) (3A)ELEMENT?/BI,BIEX) (3A) (VIA/BI,BIEX OR
APERTURE?/BI,BIEX OR HOLE/BI,BIEX OR THROUGH?/BI,BIEX (W)HOLE/BI
,BIEX)
L2 1113702 SEA ABB=ON PLU=ON SUBSTRAT?/BI,BIEX OR DIELECT?/BI,BIEX OR
PCB/BI,BIEX OR PRINT?/BI,BIEX (2A)CIRCUIT?/BI,BIEX OR INTERGRAT?
/BI,BIEX (2A)CIRCUIT?/BI,BIEX
L3 880 SEA ABB=ON PLU=ON L1 AND L2
L4 29782 SEA ABB=ON PLU=ON CONDUCT?/BI,BIEX (2A) (VIA/BI,BIEX OR
APERTUR?/BI,BIEX OR HOLE/BI,BIEX OR THROUGH?/BI,BIEX (W)HOLE?/BI
,BIEX OR CAVIT?/BI,BIEX)
L5 90 SEA ABB=ON PLU=ON L3 AND L4
L6 6426 SEA ABB=ON PLU=ON (OMNI?/BI,BIEX OR DIRECTION?/BI,BIEX) (2A) (A
NTENNA?/BI,BIEX OR (RADIAT?/BI,BIEX OR RESONAT?/BI,BIEX) (3A)ELE
MENT?/BI,BIEX)
L7 3 SEA ABB=ON PLU=ON L5 AND L6
D IFULLG 1-3
L8 1 SEA ABB=ON PLU=ON US20050122265/PN
SEL IPC MC
L9 194764 SEA ABB=ON PLU=ON (H01L0027-04/IPC OR H01P0011-00/IPC OR
H01Q0001-00/IPC OR H01Q0001-36/IPC OR H01Q0001-38/IPC OR
H01Q0009-04/IPC OR H01Q0013-08/IPC OR H01Q0023-00/IPC OR
H01L0021-70/IPC OR H01L0021-822/IPC OR H01Q0001-48/IPC OR
H01Q0009-28/IPC OR H01Q0009-30/IPC OR H01Q0009-40/IPC OR
H01Q001-38/IPC OR U11-C18B9/MC OR U14-H03C2A/MC OR V04-Q06/MC
OR V04-Q30G/MC OR W02-B07A1C/MC OR W02-B07A3A/MC)
L10 52 SEA ABB=ON PLU=ON L5 AND L9
L11 14 SEA ABB=ON PLU=ON L10 AND (GROUND?/BI,BIEX (2A) PLANE?/BI,BIEX)
L12 14 SEA ABB=ON PLU=ON L11 NOT L8
L13 14 SEA ABB=ON PLU=ON L12 NOT L7
D L13 IFULLG 1-14
L14 25 SEA ABB=ON PLU=ON L10 AND (FREQUENC?/BI,BIEX OR GHZ/BI,BIEX)
L15 16 SEA ABB=ON PLU=ON L14 NOT (L7 OR L8 OR L11)
D IFULLG 1-16

FILE 'INSPEC' ENTERED AT 09:41:40 ON 29 NOV 2007

L16 1 SEA ABB=ON PLU=ON "MORGANA M A"/AU
D IALL
E SCHWIRING/AU
E SCHWERING/AU
L17 70 SEA ABB=ON PLU=ON ("SCHWERING F"/AU OR "SCHWERING F K"/AU)
L18 35 SEA ABB=ON PLU=ON L17 AND ANTENNA?
L19 1 SEA ABB=ON PLU=ON L18 AND EIGENMODE/TI
D IALL
SEL CIT

FILE 'SCISEARCH' ENTERED AT 09:45:32 ON 29 NOV 2007

L20 16 SEA ABB=ON PLU=ON "MORGAN M A, 1994, V42, P54, ?"/RE
D IALL 1-16

Mary S. Mims EIC 2800 2-5928

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FILE 'WPIX' ENTERED AT 09:49:33 ON 29 NOV 2007

D L8 IFULLG

L21 28 SEA ABB=ON PLU=ON L5 AND (WIRELESS?/BI,BIEX OR RF/BI,BIEX OR
RADIO?/BI,BIEX(W)FREQU?/BI,BIEX)

L22 11 SEA ABB=ON PLU=ON L21 NOT (L7 OR L8 OR L11 OR L15)
D IFULLG 1-11

11/29/2007 10/731520 Alemu

L7 ANSWER 2 OF 3 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
ACCESSION NUMBER: 1978-E6838A [24] WPIX
TITLE: Panoramic aerial radiating in horizontal plane - has
directivity in vertical plane and disc **dielectric**
between double cones
DERWENT CLASS: W02
INVENTOR: BOUKO J; SALVAT F
PATENT ASSIGNEE: (CSFC-C) THOMSON CSF
COUNTRY COUNT: 6

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
NL 7713137	A	19780601	(197824) *	NL		
DE 2753180	A	19780615	(197825)	DE		
FR 2372522	A	19780728	(197835)	FR		
US 4143377	A	19790306	(197911)	EN		
DE 2753180	B	19791031	(197945)	DE		
GB 1568132	A	19800529	(198024)	EN		
IT 1090595	B	19850626	(198632)	IT		

PRIORITY APPLN. INFO: FR 1976-36071 19761130

INT. PATENT CLASSIF.:

IPC RECLASSIF.: H01Q0013-00 [I,C]; H01Q0013-04 [I,A]; H01Q0019-00 [I,C];
H01Q0019-06 [I,A]

BASIC ABSTRACT:

NL 7713137 A UPAB: 20050816

The panoramic aerial, radiates in a horizontal plane, and the polar diagram can have a certain amount of directivity in the vertical plane. The aerial is of the double cone type, where the sawn off apices face each other. The aerial is fed from a **conductor via** the tops, which are separated by **dielectric** discs.

Two of the **dielectric** discs (6, 7) are fitted in parallel with the base of the cones and at a given distance from the respective tops. The discs have a given length and thickness. They will alter the propagation characteristics of the energy to achieve a reduction in the phase differences between the centre of the opening and the edges.

FILE SEGMENT: EPI

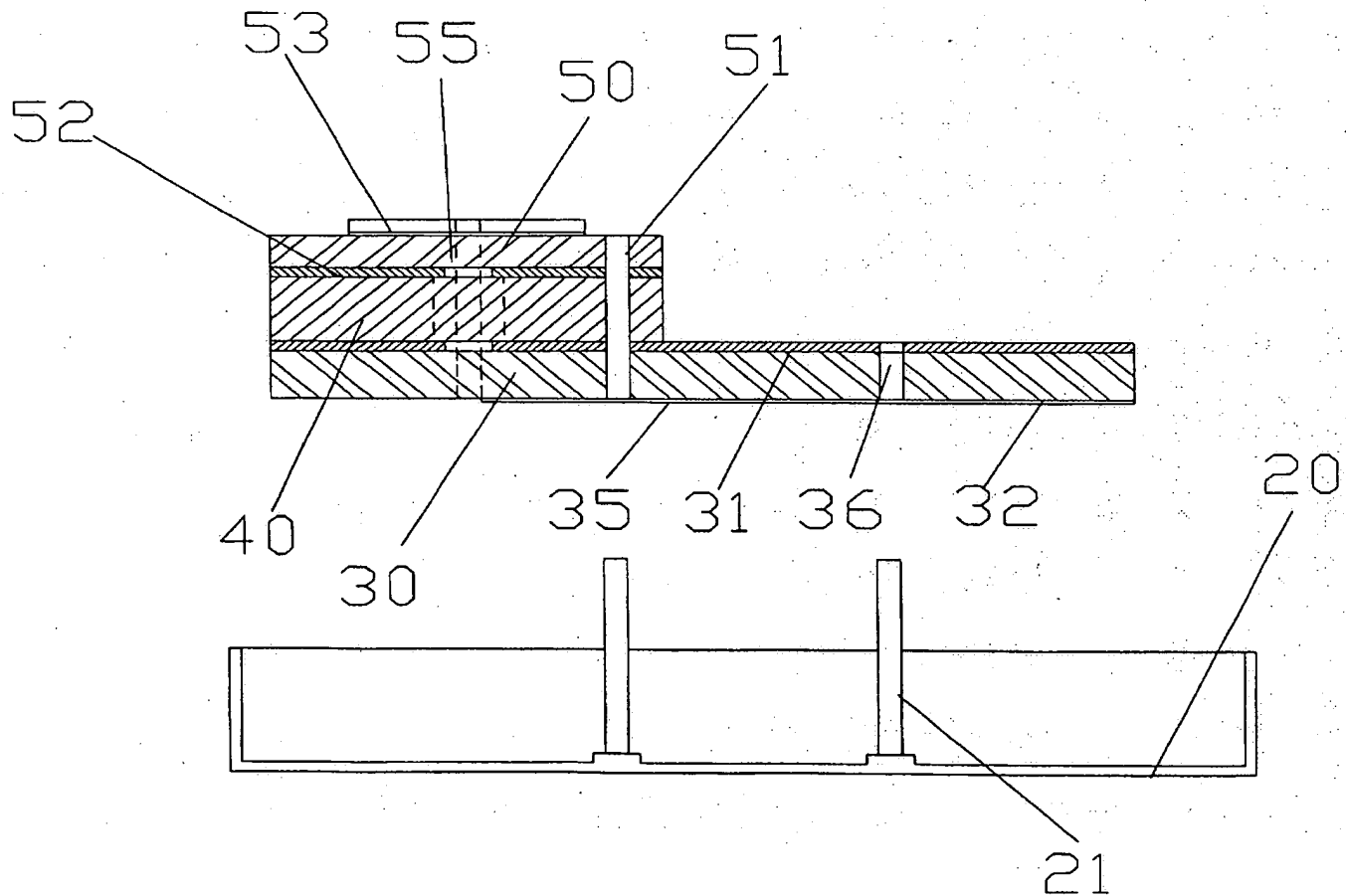
11/29/2007 10/731520 Alemu

L13 ANSWER 5 OF 14 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
ACCESSION NUMBER: 2004-095840 [10] WPIX
DOC. NO. CPI: C2004-039391 [10]
DOC. NO. NON-CPI: N2004-076320 [10]
TITLE: **Antenna has through-hole**
and electric conductor to act as outer and
inner conductors respectively for coaxial cable structure
to form signal path in order to receive and transmit
microwave signals
DERWENT CLASS: A85; L03; V04; W02
INVENTOR: KU K; YANG C
PATENT ASSIGNEE: (PROB-N) PRO BROADBAND INC
COUNTRY COUNT: 1

PATENT INFORMATION:

PATENT NO	KIND DATE	WEEK	LA PG	MAIN IPC
US 6392601	B1 20020521	(200410)*	EN 12 [7]	

PRIORITY APPLN. INFO: US 2001-816310 20010326
INT. PATENT CLASSIF.:
IPC RECLASSIF.: H01Q0009-04 [I,A]; H01Q0009-04 [I,C]



BASIC ABSTRACT:

Mary S. Mims EIC 2800 2-5928

US 6392601 B1 UPAB: 20050528

NOVELTY - An intermediate layer (40) arranged between the **ground plane** (52) of **PCB** (30) and patch antenna (50), forms a grounded electrical potential. An electric conductor penetrates to the **PCB** through the intermediate layer and patch **antenna**. A **through-hole** (41) of the intermediate layer acts as outer conductor and electric conductor acts as inner conductor for coaxial cable structure to form signal path to receive and transmit microwave signals.

DETAILED DESCRIPTION - The upper layer side of the **printed circuit board** is covered with a **ground plane** which is made up of electric conductive materials contacting the intermediate layer and in the other side a printed layer is formed with circuit elements. A through-hole in the intermediate layer is formed against a feed hole (33) on the **printed circuit board**. One side of the patch antenna is arranged to contact the intermediate layer and other side is formed with predetermined number of radiating elements. The patch **antenna** has a penetrating **hole** at a position corresponding to the through-hole, to pass the feeding signals to the **radiating elements**. The feed **hole** of **printed circuit board** is a signal feeding point for connecting to the **printed circuit layer**, and feed **hole** of the patch **antenna** is a signal feeding point for connecting to the radiating elements. A filling insulator comprised of air and polytetrafluoroethylene fills the through-hole of the intermediate layer and surrounds the electric conductor. The filling insulator material type, dimension of the **through-hole** and electric **conductor** are selected to provide an appropriate impedance of the coaxial cable structure.

USE - Antenna for receiving and transmitting microwave signals, for industrial applications.

ADVANTAGE - The loss is decreased because the thickness of the intermediate layer is made smaller than the cable length and heat generated is sunk by the intermediate layer quickly. The assembled PC board, intermediate layer and patch antenna are completely finished and then they are sturdily jointed together, to improve the defectiveness of connection between deviated and rotational elements, and this kind of assembly decreases the labor cost. As the intermediate layer is in direct face-to-face contact with the **ground plane** of the patch antenna and circuit board, heat generated by high power microwave signals is effectively and rapidly dissipated through **printed circuit layer** and radiating elements.

DESCRIPTION OF DRAWINGS - The figure shows a diagrammatic sketch illustrating the antenna assembly and fabrication.

Printed circuit board (30)

Feed hole (33)

Intermediate layer (40)

Through-hole (41)

Patch antenna (50)

Ground plane (52)

FILE SEGMENT:

CPI; EPI

MANUAL CODE:

CPI: A04-E08; A12-E; L03-H03

EPI: V04-Q06; W02-B07A3

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L15 ANSWER 14 OF 16 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
ACCESSION NUMBER: 1998-147679 [14] WPIX
DOC. NO. NON-CPI: N1998-117010 [14]
TITLE: Antenna device e.g. for mobile radio communication system
- constructed by mounting main antenna unit on mounting
substrate having transmission line formed on
upper surface of mounting **substrate** and has
ground electrode formed on back surface
DERWENT CLASS: W02
INVENTOR: BANDAI H; KAMINAMI S; KANBA S; MANDAI H; SUESADA T; TSURU
T
PATENT ASSIGNEE: (MURA-C) MURATA MFG CO LTD
COUNTRY COUNT: 20

PATENT INFORMATION:

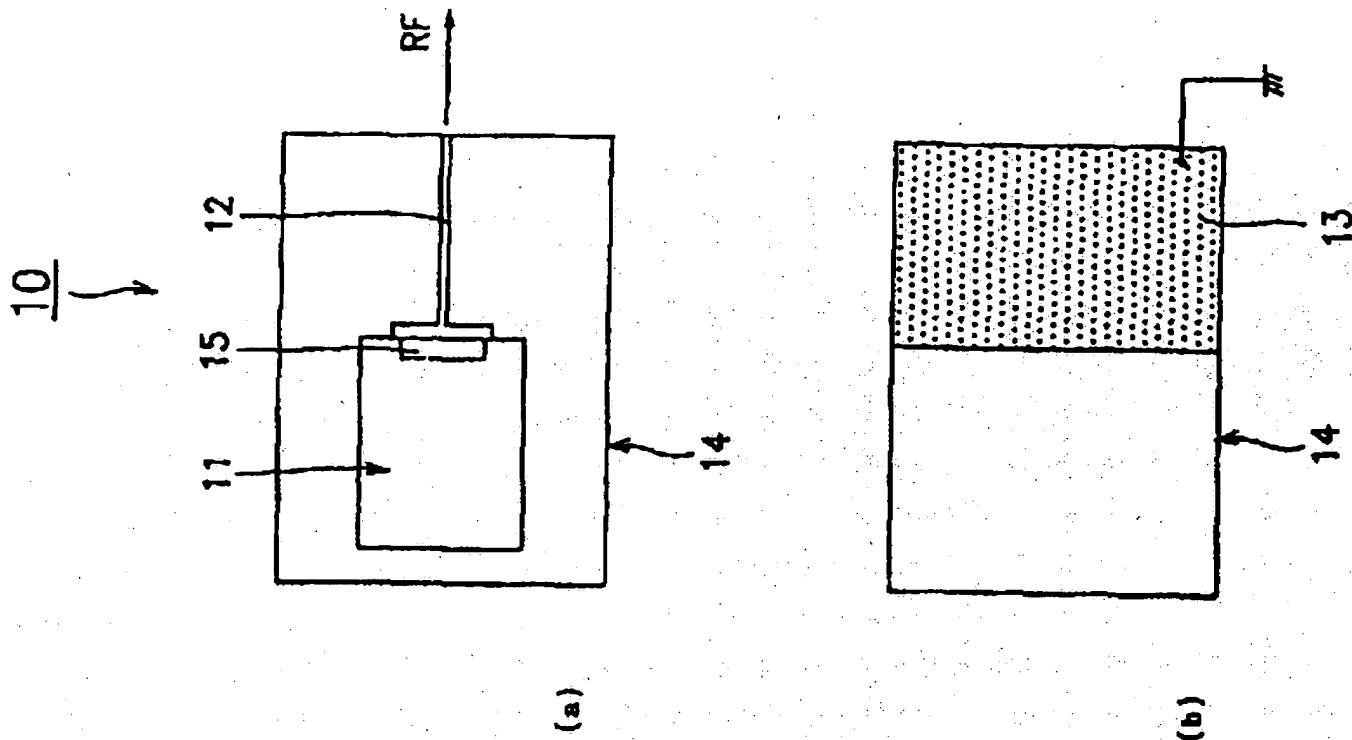
PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
EP 828310	A2	19980311	(199814)*	EN	15	[11]
JP 10145125	A	19980529	(199832)	JA	7	
US 5999146	A	19991207	(200004)	EN		
EP 828310	B1	20060531	(200637)	EN		
DE 69735983	E	20060706	(200648)	DE		
DE 69735983	T2	20061207	(200680)	DE		

PRIORITY APPLN. INFO: JP 1997-63028 19970317
JP 1996-239261 19960910

INT. PATENT CLASSIF.:

IPC ORIGINAL: H01Q0001-36 [I,A]; H01Q0001-36 [I,A];
H01Q0001-36 [I,C]; H01Q0001-38 [I,A];
H01Q0001-38 [I,A]; H01Q0001-38 [I,C];
H01Q0001-38 [I,C]

IPC RECLASSIF.: H01Q0001-36 [I,A]; H01Q0001-36 [I,C];
H01Q0001-38 [I,A]; H01Q0001-38 [I,C];
H01Q0011-00 [I,C]; H01Q0011-08 [I,A]



BASIC ABSTRACT:

EP 828310 A2 UPAB: 20060114

The device comprises a main antenna unit which has a base (16) having a **dielectric** material and a magnetic material. A conductor (17) is formed on a surface of the base and inside the base. A feeding terminal (15) is formed on the surface of the base to allow a voltage to be applied to the **conductor** via the feeding terminal.

The ground conductor has either one of a ground electrode formed on a mounting **substrate** on which the main antenna unit is mounted or the ground line of a transmission line via which the voltage is fed to the main antenna unit. The conductor of the main antenna unit is wound helically and the winding cross section of the conductor is rectangular. The winding cross section of the conductor can be circular or elliptic.

ADVANTAGE - Provides small sized antenna in which conductor length is reduced without encountering reduction in gain.

FILE SEGMENT:

EPI

MANUAL CODE:

EPI: W02-B01B; W02-C03C1C; W02-G02A

11/29/2007 10/731520 Alemu

L15 ANSWER 15 OF 16 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
ACCESSION NUMBER: 1992-400661 [49] WPIX
DOC. NO. NON-CPI: N1992-305517 [21]
TITLE: Planar antenna with ring radiation element - has
concentrically formed opening in rectangular radiation
element laminated on ground conductor
via. dielectric layer
DERWENT CLASS: W02
INVENTOR: KURODA S; ONO N; TORIYAMA I
PATENT ASSIGNEE: (SONY-C) SONY CORP
COUNTRY COUNT: 5

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
EP 516303	A1	19921202	(199249)*	EN	23	[28]
JP 04336805	A	19921125	(199302)	JA	7	
JP 04337908	A	19921125	(199302)	JA	8	
US 5371507	A	19941206	(199503)	EN	20	[25]
EP 516303	B1	19970312	(199715)	EN	21	[23]
DE 69218045	E	19970417	(199721)	DE		

PRIORITY APPLN. INFO: JP 1991-110435 19910515
JP 1991-109333 19910514

INT. PATENT CLASSIF.:

MAIN: H01Q0009-04
IPC RECLASSIF.: H01Q0001-38 [I,A]; H01Q0001-38 [I,C];
H01Q0013-08 [I,A]; H01Q0013-08 [I,A];
H01Q0013-08 [I,C]; H01Q0013-08 [I,C];
H01Q0021-24 [I,A]; H01Q0021-24 [I,C]; H01Q0009-04
[I,A]; H01Q0009-04 [I,A]; H01Q0009-04
[I,C]; H01Q0009-04 [I,C]

FIG. 7

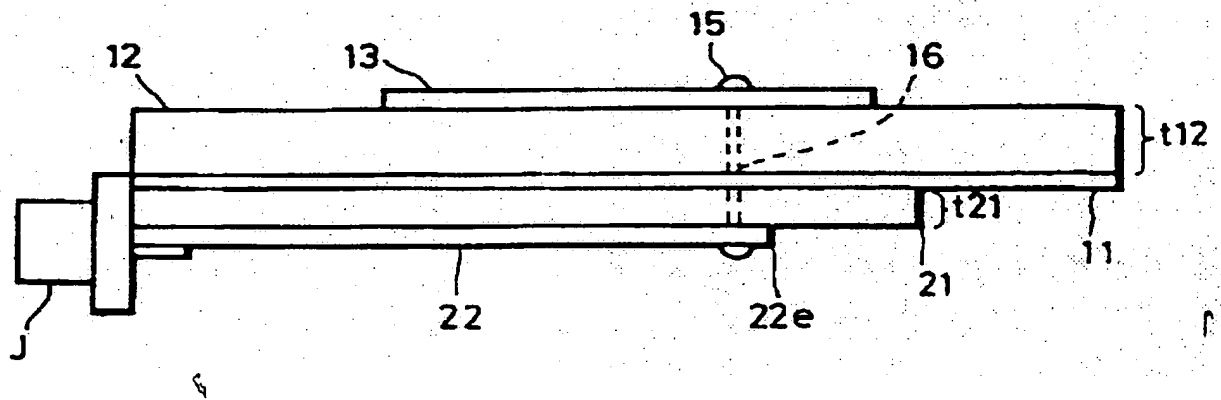
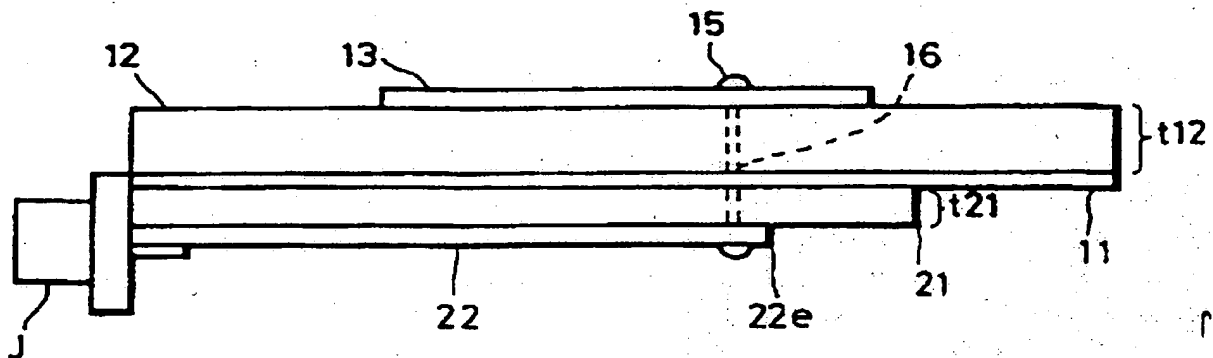


FIG. 7



BASIC ABSTRACT:

EP 516303 A1 UPAB: 20050505

The antenna has a **dielectric** layer (12) laminated on a ground conductor (11). A rectangular radiation element (13) is laminated onto the surface of the **dielectric** layer opposing the ground conductor. A rectangular opening (14) is concentrically formed through the radiation element, so as to provide a ring radiation element. A feed point (15) is disposed near the centre of one side of the opening.

Pref. the feed point is connected via a feed hole (16) to a feed line (22) provided on the surface of the ground conductor opposing the radiation element. The feed line may include a tuning stub (23).

ADVANTAGE - In satellite and mobile communication fields. Suitable for circular polarisation. Can be unitarily formed with communication equipment.

FILE SEGMENT:

EPI

MANUAL CODE:

EPI: W02-B02A; W02-B03C

L20 ANSWER 8 OF 16 SCISEARCH COPYRIGHT (c) 2007 The Thomson Corporation on STN

ACCESSION NUMBER: 2003:938997 SCISEARCH <<LOGINID::20071129>>

THE GENUINE ARTICLE: 735LB

TITLE: Sleeve monopole on a circular ground-plane

AUTHOR: Shen Z X (Reprint); MacPhie R H

CORPORATE SOURCE: Nanyang Technol Univ, Sch Elect & Elect Engn, Nanyang Ave, Singapore 639798, Singapore (Reprint); Nanyang Technol Univ, Sch Elect & Elect Engn, Singapore 639798, Singapore; Univ Waterloo, Dept Elect & Comp Engn, Waterloo, ON N2L 3G1, Canada

COUNTRY OF AUTHOR: Singapore; Canada

SOURCE: INTERNATIONAL JOURNAL OF NUMERICAL MODELLING-ELECTRONIC NETWORKS DEVICES AND FIELDS, (SEP-OCT 2003) Vol. 16, No. 5, pp. 427-441.
ISSN: 0894-3370.

PUBLISHER: JOHN WILEY & SONS LTD, THE ATRIUM, SOUTHERN GATE, CHICHESTER PO19 8SQ, W SUSSEX, ENGLAND.

DOCUMENT TYPE: Article; Journal

LANGUAGE: English

REFERENCE COUNT: 19

ENTRY DATE: Entered STN: 7 Nov 2003

Last Updated on STN: 7 Nov 2003

ABSTRACT:

This paper presents a modal-expansion analysis of a sleeve monopole antenna on a finite ground-plane. Two perfectly conducting plates (one above the monopole and the other under the ground-plane) are introduced to confine the modeling region and to facilitate the modal-expansion analysis. The resulting guided-wave structure is then divided into a number of regions and the electromagnetic field components in each region are expanded into the summation of its modal functions. The surface current distribution on the monopole and the antenna's input impedance and radiation pattern are obtained by finding the expansion coefficients through matching the tangential field components across the regional interfaces. Calculated results by the modal-expansion method agree well with measured results for the return loss of a sleeve monopole fed through a circular ground-plane by a coaxial probe. Numerical results for the surface current distribution, input impedance, and radiation pattern of a sleeve monopole on a circular ground plane are presented and discussed.

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CATEGORY: ENGINEERING, ELECTRICAL & ELECTRONIC

SUPPLEMENTARY TERM: monopole antenna; sleeve monopole; finite ground-plane; modal-expansion method

SUPPL. TERM PLUS: ANTENNAS

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
=====	=====	=====	=====	=====
ABRAMOWITZ M	1965			HDB MATH FUNCTIONS
BALANIS C A	1982			ANTENNA THEORY ANAL
BARDEEN J	1930	36	1482	PHYS REV
FELSEN L B	1973			RAD SCATTERING WAVES
KING R W P	1971			TABLES ANTENNA CHARA
KING R W P	1956			THEORY LINEAR ANTENN
KUHN E	1973	27	511	AEU-ARCH ELEKTRON UB
MARCUVITZ N	1951			WAVEGUIDE HDB
MEIER A S	1949	37	609	P IEEE
MITTRA R	1971			ANALYTICAL TECHNIQUE
MORGAN M A	1994	42	54	IEEE T ANTENN PROPAG <--

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POGGIO A J	1966	14	643	IEEE T ANTENN PROPAG
RICHMOND J H	1984	32	1282	IEEE T ANTENN PROPAG
SHEN Z X	1996	31	1037	RADIO SCI
SHEN Z X	1996	44	1584	IEEE T ANTENN PROPAG
SHEN Z	1998	2	1726	IEEE AP S INT S
TAYLOR J	1950			THESIS HARVARD U CAM
THIELE G A	1975	23	62	IEEE T ANTENN PROPAG
WEINER M M	1987	35	488	IEEE T ANTENN PROPAG

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L20 ANSWER 11 OF 16 SCISEARCH COPYRIGHT (c) 2007 The Thomson Corporation on STN

ACCESSION NUMBER: 2001:240143 SCISEARCH <<LOGINID::20071129>>

THE GENUINE ARTICLE: 411HB

TITLE: Numerical analysis of sleeve monopole in parallel-plate waveguide

AUTHOR: Chen Z N (Reprint); Hirasawa K; Wu K

CORPORATE SOURCE: Natl Univ Singapore, Ctr Wireless Commun, Singapore 0511, Singapore (Reprint); Univ Tsukuba, Inst Informat Sci & Elect, Tsukuba, Ibaraki 305, Japan; Ecole Polytech, Polygrames Res Ctr, Montreal, PQ H3C 3A7, Canada

COUNTRY OF AUTHOR: Singapore; Japan; Canada

SOURCE: INTERNATIONAL JOURNAL OF RF AND MICROWAVE COMPUTER-AIDED ENGINEERING, (MAR 2001) Vol. 11, No. 2, pp. 86-98. ISSN: 1096-4290.

PUBLISHER: JOHN WILEY & SONS INC, 605 THIRD AVE, NEW YORK, NY 10158-0012 USA.

DOCUMENT TYPE: Article; Journal

LANGUAGE: English

REFERENCE COUNT: 37

ENTRY DATE: Entered STN: 30 Mar 2001

Last Updated on STN: 30 Mar 2001

ABSTRACT:

A monopole with double sleeves, which consists of a resonant loading and a conventional sleeve monopole, is experimentally investigated. The loaded monopole is put vertically in a parallel-plate waveguide and driven by a coaxial feeder. The new structure exhibits a remarkably broad impedance bandwidth. In this paper, a modal expansion technique is used to numerically evaluate the impedance characteristics of the monopole by modeling the fields between the plates using cylindrical harmonic functions. A Fourier least-square integration is applied to finding the expansion coefficients by the boundary and continuity conditions. Prior to modeling the proposed sleeve monopole, the developed analysis scheme is examined for its convergence and accuracy. Calculated results are validated by the measurements. For the optimum design at 5.8 Ghz, we investigate the effects of the structure parameters on the impedance characteristics. (C) 2001 John Wiley & Sons, Inc.

CATEGORY: COMPUTER SCIENCE, INTERDISCIPLINARY APPLICATIONS; ENGINEERING, ELECTRICAL & ELECTRONIC

SUPPLEMENTARY TERM: eigenmode expansion method; parallel-plate waveguide; sleeve monopole; waveguide transition; broadband design

SUPPL. TERM PLUS: FED DIELECTRIC RESONATOR; THICK GROUND PLANE; WAVE-GUIDE; SLOT ANTENNA; PROBE; CAVITY

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
AN H	1994	30	2086	ELECTRON LETT
ANDO M	1987	70	495	IEICE T JAPAN J B
ANDO M	1988	36	1675	IEEE T ANTENN PROPAG
BIALKOWSKI M E	1986	34	937	IEEE T MICROWAVE THE
BIALKOWSKI M E	1995	43	344	IEEE T MICROW THEORY
BIALKOWSKI M E	1984	38	306	AEU-ARCH ELEKTRON UB
BIALKOWSKI M E	1993	41	1126	IEEE T MICROW THEORY
BIALKOWSKI M E	1991	1	211	IEEE MICROW GUIDED W
BIALKOWSKI M F	1985	39	190	AEU
CHEN Z N	1998	84	529	INT J ELECTRON
CHEN Z N	1999		1244	IEEE ANT PROP S ORL
CHEN Z N	1998		1730	IEEE AP-S

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CHEN Z N	1999		732	AS PAC MICR C SING D
DAVIS P W	1997	45	1123	IEEE T ANTENN PROPAG
GOTO N	1980		43	AP8057 IECE
HADDAD P R	1994	30	1106	ELECTRON LETT
HARRINGTON R F	1961			TIME HARMONIC ELECTR
JAREM J M	1991	39	444	IEEE T MICROW THEORY
KAKLAMANI D I	1992	12	185	ELECTROMAGNETICS
KEAM R B	1993	41	516	IEEE T MICROW THEORY
KISHK A A	1989		6	IEEE ANTENNAS PROPAG
KRAUS J D	1988			ANTENNAS
LEUNG K W	1999	47	1113	IEEE T MICROW THEO 1
LEUNG K W	1998	46	1242	IEEE T ANTENN PROPAG
LONG S A	1983	31	406	IEEE T ANTENN PROPAG
MORGAN M A	1994	42	54	IEEE T ANTENN PROPAG <--
MORGAN M A	1990	38	1130	IEEE T ANTENN PROPAG
POGGIO A J	1966	14	643	IEEE T ANTENN PROPAG
QI S X	1998	46	1767	IEEE T MICROW THEO 1
SASAZAWA H	1988	36	1221	IEEE T ANTENN PROPAG
SHEN Z X	1996	44	1584	IEEE T ANTENN PROPAG
STUTZMAN W L	1981			ANTENNA THEORY DESIG
TOMASIC B	1988	36	449	IEEE T ANTENN PROPAG
TOMASIC B	1988	36	463	IEEE T ANTENN PROPAG
TOMASIC B	1987	35	1307	IEEE T AP
WANG T	1995			IEEE MICR THEOR TECH
WILLIAMSON A G	1973	9	218	ELECTRON LETT

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L28 ANSWER 10 OF 23 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 2001:6805050 INSPEC
DOCUMENT NUMBER: B2001-02-5270D-051
TITLE: Switched fragmented **aperture antennas**
AUTHOR: Maloney, J.C.; Kesler, M.P.; Lust, L.M.; Pringle, L.N.; Fountain, T.L.; Harms, P.H.; (Signature Technol. Lab., Georgia Tech. Res. Inst., Atlanta, GA, USA), Smith, G.S.
SOURCE: IEEE Antennas and Propagation Society International Symposium. Transmitting Waves of Progress to the Next Millennium. 2000 Digest. Held in conjunction with: USNC/URSI National Radio Science Meeting (Cat. No.00CH37118), vol.1, 2000, p. 310-13 vol.1 of 4 vol. xi+2359 pp., 3 refs.
ISBN: 0 7803 6369 8
Price: 0 7803 6369 8/2000/\$10.00
Published by: IEEE, Piscataway, NJ, USA
Conference: IEEE Antennas and Propagation Society International Symposium. Transmitting Waves of Progress to the Next Millennium, Salt Lake City, UT, USA, 16-21 July 2000
Sponsor(s): Agilent Technol.; Hewlett-Packard; Kennecott Utah Copper; L-3 Commun.; MOOG Inc; Motorola; Raytheon Syst
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Application; Practical; Experimental
COUNTRY: United States
LANGUAGE: English
ABSTRACT: This paper introduces a reconfigurable aperture concept derived from fragmented aperture design where the configuration of the fragmented aperture may be switched by the user to obtain different functionalities. A fragmented **aperture antenna** is a patchwork of discrete conducting and **dielectric** units distributed over the specified aperture. The arrangement of the units is determined using an efficient, multistage procedure that incorporates the genetic algorithm for optimization and the finite-difference time-domain method for the electromagnetic computation. Typically, the criterion for optimum performance has been broadband gain at a particular angle. The resulting antennas contain isolated scattering structures that are fragmented in appearance
CLASSIFICATION CODE: B5270D Antenna arrays; B0260 Optimisation techniques; B0290Z Other numerical methods
CONTROLLED TERM: finite difference time-domain analysis; genetic algorithms; microstrip antenna arrays
SUPPLEMENTARY TERM: switched fragmented aperture antennas; reconfigurable aperture; fragmented aperture design; discrete conducting units; discrete dielectric units; multistage procedure; genetic algorithm; optimization; finite-difference time-domain method; electromagnetic computation; broadband gain; isolated scattering structures; antenna array; in-band measured antenna pattern

L28 ANSWER 17 OF 23 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1994:4836035 INSPEC
DOCUMENT NUMBER: B1995-01-5270B-015
TITLE: Axial slot antenna on an anisotropic
dielectric-coated circular cylinder
AUTHOR: Wu, X.-B.; (Res. Inst. of Radiowave Propagation,
Henan, China), Ren, W.
SOURCE: IEE Proceedings-Microwaves, Antennas and Propagation
(Dec. 1994), vol.141, no.6, p. 527-30, 11 refs.
CODEN: IMIPEP, ISSN: 1350-2417..
SICI: 1350-2417(199412)141:6L:527:ASAA;1-Q
Price: 1350-2417/94/\$7.50+0.00
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
COUNTRY: United Kingdom
LANGUAGE: English
ABSTRACT: This paper presents an analytical solution of an axial
slot antenna on a conducting circular cylinder coated
with an anisotropic material in terms of the series of
wave functions for anisotropic media. This solution is
formally similar to the solution of an axial slot
antenna on a conducting elliptic cylinder with an
isotropic **dielectric** coating. In the
anisotropic **dielectric** coating, and in the
exterior free space region, the fields are expanded by
the wave functions in anisotropic media and the well
known wave functions in isotropic media, respectively.
Numerical results for the far-field radiation patterns
and the **aperture conductance**
against coating thickness for different anisotropic
media are presented for the transverse electric (TE)
and transverse magnetic (TM) polarisations. Numerical
results for the gyrotropic type media are used to
check our calculations, and those for general
anisotropic media are presented to provide references
for future computations by using other methods,
respectively
CLASSIFICATION CODE: B5270B Single antennas; B5260 Antenna theory
CONTROLLED TERM: antenna radiation patterns; **aperture**
antennas; dielectric-loaded
antennas; numerical analysis; slot antennas; wave
functions
SUPPLEMENTARY TERM: axial slot antenna; anisotropic dielectric-coated
circular cylinder; analytical solution; conducting
circular cylinder; wave functions; anisotropic media;
isotropic media; numerical results; far-field
radiation patterns; aperture conductance; coating
thickness; transverse electric polarisation;
transverse magnetic polarisation; gyrotropic type
media

L28 ANSWER 20 OF 23 INSPEC (C) 2007 IET on STN
ACCESSION NUMBER: 1990:3589411 INSPEC
DOCUMENT NUMBER: B1990-023313
TITLE: Radiation from an aperture on a coated cylinder:
numerical and experimental results
AUTHOR: Fournier, M.A.; (Electron. Serge Dassault, St. Cloud,
France), Tabbara, W.; Beaulieu, L.
SOURCE: AP-S International Symposium 1989. 1989 International
Symposium Digest: Antennas and Propagation (Cat.
No.CH2654-2/89), 1989, p. 1410-13 vol.3 of 3 vol.
x+1754 pp., 3 refs.
Price: CH2654-2/89/0000-1410\$01.00
Published by: IEEE, New York, NY, USA
Conference: AP-S International Symposium 1989. 1989
International Symposium Digest: Antennas and
Propagation (Cat. No.CH2654-2/89), San Jose, CA, USA,
26-30 June 1989
Sponsor(s): IEEE
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English
ABSTRACT: The authors consider the radiation problem of an
aperture on a **dielectric**-coated perfectly
conducting cylinder. The **aperture** is
modeled by an infinite line source. The modeling
follows the approach of R. Paknys (1985). In the
experimental study, a longitudinal X-band slot (8-12
GHz) was set on the conducting surface of the
cylinder. Theoretical results are in good agreement
with the experimental ones except for the oscillations
present in the numerical results
CLASSIFICATION CODE: B5260 Antenna theory; B5270B Single antennas
CONTROLLED TERM: antenna radiation patterns
SUPPLEMENTARY TERM: antenna radiation patterns; aperture; coated cylinder;
radiation problem; dielectric-coated perfectly
conducting cylinder; infinite line source;
longitudinal X-band slot; 8 to 12 GHz
PHYSICAL PROPERTIES: frequency 8.0E+09 to 1.2E+10 Hz.